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EXAMINER

KEEFER, MICHAEL E

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/717,607	Applicant(s) KIM ET AL.	
	Examiner MICHAEL E. KEEFER	Art Unit 2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 26 March 2008.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-8, 10, 11 and 16-27 is/are pending in the application.

 4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-8, 10, 11 and 16-27 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the RCE filed 3/26/2008.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claim1-8, 10-11, and 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ton (US 2002/0067704) in view of Applicant's Admitted Prior Art, hereafter AAPA.

Regarding **claim 1**, Ton discloses:

A method comprising:

transmitting a binding update (BU) message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent, in a mobile IPv6 environment, wherein the slave home agent information is information on a slave home agent that neighbors the master home agent. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 2 as applied to claim 1**, Ton discloses:

wherein when the identifier is set to "1", the identifier indicates that there is a request for the slave home agent information, and when the identifier is set to "0", the identifier indicates that there is no request for the slave home agent information. (A bit value of 1 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is desired. A bit value of 0 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is not desired.)

Regarding **claim 3 as applied to claims 1-2**, Ton discloses:

wherein the BU message is transmitted in a first round of a binding update/binding acknowledgement (BU/BACK) operation. (The RRQ and RRP messages exchanged in [0060] - [0062] are equivalent to BU/BACK messages as they both serve the same purpose of setting up a tunnel between a HA and MN in a Mobile IP environment)

Regarding **claim 4**, Ton discloses:

A method comprising: transmitting a binding acknowledgement (BACK) message, containing slave home agent information, to a mobile node, in a mobile IPv6 environment. ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

Regarding **claim 5 as applied to claim 4**, Ton discloses:

wherein the slave home agent information comprises:

an identifier that indicates whether the slave home agent information will be transmitted; ([0060] discloses that error code 0 is sent when alternate HA

information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

a number of slave home agents; and ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

at least one slave home agent address. ([0060] discloses that addresses of alternate HAs are sent.)

Regarding **claim 6 as applied to claims 4-5**, Ton discloses:

wherein when the identifier is set to "0", the identifier indicates that the slave home agent information will not be transmitted, and when the identifier is set to a predetermined value other than "0", the identifier indicates that the slave home agent information will be transmitted. ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

Regarding **claim 7 as applied to claim 4**, Ton discloses:

wherein the BACK message is transmitted in a first round of a BU/BACK operation. (The RRQ and RRP messages exchanged in [0060] - [0062] are equivalent to BU/BACK messages as they both serve the same purpose of setting up a tunnel between a HA and MN in a Mobile IP environment)

Regarding **claim 8**, Ton discloses:

A binding update (BU) message in a mobile IPv6 environment, containing an identifier that indicates whether there is a request for slave home agent

information, wherein the slave home agent information is information on a slave home agent that neighbors a master home agent that receives the BU message. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 9 as applied to claim 8**, Ton discloses:

The BU message of claim 8, wherein when the identifier is set to "1", the identifier indicates that there is a request for the slave home agent information, and when the identifier is set to "0", the identifier indicates that there is no request for the slave home agent information. (A bit value of 1 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is desired. A bit value of 0 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is not desired.)

Regarding **claim 10**, Ton discloses:

A binding acknowledgement (BACK) message in a mobile IPv6 environment, containing slave home agent information. ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

Regarding **claim 11 as applied to claim 10**, Ton discloses:

wherein the slave home agent information comprises:

an identifier that indicates whether the slave home agent information will be transmitted; ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

a number of slave home agents; and ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

at least one slave home agent address. ([0060] discloses that addresses of alternate HAs are sent.)

Regarding **claim 12 as applied to claims 10-11**, Ton discloses:

wherein when the identifier is set to "0", the identifier indicates that the slave home agent information will not be transmitted, and when the identifier is set to a predetermined value other than "0", the identifier indicates that the slave home agent information will be transmitted. ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

Regarding **claim 13 as applied to claims 10-11**, Ton discloses:

wherein slave home agent addresses are arranged in a predetermined order according to their priority levels. (Since the home agent is load balanced,

the home agents sent to the mobile node will all be higher priority than the existing node.)

Regarding **claim 14**, Ton discloses:

A mobile node that carries out binding update (BU) in a mobile IPv6 environment, the mobile node comprising:

a BU message transmission unit that transmits a BU message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent; ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

a binding acknowledgement (BACK) message reception unit that receives a BACK message, containing the slave home agent information, from the master home agent; and ([0062] discloses that the response to the request is received.)

a slave home agent information storing unit that stores the slave home agent information contained in the BACK message, wherein if the BACK message has not been received from the master home agent at a predetermined moment of time, the BU message transmission unit transmits the BU message to a new master home agent using the slave home agent information stored in the slave home agent information storing unit. ([0062] discloses storing the list, [0063]-[0064] discloses using the list to send a new request if the primary HA fails.)

Regarding **claim 15**, Ton discloses:

A home agent that carries out binding update (BU) in a mobile IPv6 environment, the home agent comprising:

a BU message reception unit that receives a BU message, containing an identifier that indicates whether there is a request for slave home agent information, from a mobile node; ([0060] discloses the HA receiving the RRQ message.)

a slave home agent information transmission determination unit that determines whether to transmit the slave home agent information, requested by the mobile node, to the mobile node; ([0063] discloses determining whether to send the information or not)

a binding acknowledgement (BACK) message generation unit which generates a BACK message, containing the slave home agent information, if the slave home agent information transmission determination unit determines to transmit the slave home agent information, and generates an ordinary BACK message if the slave home agent information transmission determination unit determines not to transmit the slave home agent information; and ([0060] and [0064] disclose sending acknowledgements with and without the information)

a BACK message transmission unit that transmits the BACK message created by the BACK message generation unit to the mobile node. ([0060] and [0064] disclose sending acknowledgements with and without the information)

Regarding **claim 16**, Ton discloses:

A method of discovering a home agent address in a mobile IPv6 environment, comprising:

inserting a slave home agent address information request into a first binding update (BU) message; and transmitting the first BU message to a master home agent. transmitting a binding update (BU) message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent, in a mobile IPv6 environment, wherein the slave home agent information is information on a slave home agent that neighbors the master home agent. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 17 as applied to claim 16**, Ton discloses:

upon not receiving a binding acknowledgement (BACK) message from the master home agent at a predetermined time, inserting the slave home agent address information request into a second BU message; and transmitting the second BU message to a slave home agent, wherein the slave home agent was identified in a previous BACK message, which included slave home agent information, and which was received from the master home agent in response to

a previous BU message that included the slave home agent address information request. ([0063]-[0065])

Regarding **claim 18 as applied to claim 16**, Ton discloses:

wherein the first BU message comprises a home agent address request identification field to indicate whether slave home agent information is needed. (As cited in claim 16, the 'A' field serves this purpose)

Regarding **claim 19 as applied to claims 16-17**, Ton discloses:

wherein the second BU message comprises a home address request identification field to indicate whether the slave home agent information is needed. (As cited in claim 16, the 'A' field serves this purpose)

Regarding **claim 20 as applied to claim 16**, Ton discloses:

receiving a binding acknowledgement (BACK) message from the master home agent. ([0060] discloses receiving a RRQ i.e. a BACK message)

Regarding **claim 21 as applied to claims 16 and 20**, Ton discloses:

wherein the BACK message comprises a status field to indicate whether slave home agent information is included. (The error code field serves this purpose. [0060] and [0063])

Regarding **claim 22 as applied to claims 16 and 20-21**, Ton discloses:

wherein the BACK message comprises slave home agent information when the status field indicates that the slave home agent information is included, and wherein the BACK message does not comprise slave home agent information when the status field indicates that the slave home agent information

is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

Regarding **claim 23 as applied to claims 16 and 20-22**, Ton discloses:

wherein the BACK message comprises a number-of-slave home agents field to indicate a number of candidate slave home agents of higher priority levels. ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

Regarding **claim 24 as applied to claims 16 and 20-23**, Ton discloses:

wherein the number-of-slave home agents field includes the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is included, and wherein the number-of-slave home agents field does not include the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

Ton discloses all the limitations of claims 1-8, 10-11, and 13-24 except for the binding update message being sent **directly** to the home agent from the mobile node.

The general concept of sending a binding update message directly to a home agent from a mobile node is well known in the art as taught by AAPA. (See

[0010] which describes a mobile node sending the home agent a binding update message.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Ton with the general concept of sending a binding update message directly to a home agent from a mobile node as taught by AAPA in order to make the binding update procedure more efficient by cutting out the relaying foreign agent.

4. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ton and AAPA as applied to claims 16 and 20-23 above, and further in view of Ton.

Regarding **claims 25-27**, Ton discloses:

wherein the BACK message further comprises a home agent address field to indicate addresses of the candidate slave home agents. (the Mobile IP Extension Field contains addresses, [0060])

wherein the home agent address field includes the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is included, and wherein the home agent address field does not include the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

Ton and AAPA teach all the limitations of claims 25-27, but, does not disclose in the same embodiment the ordering of alternative home agents based upon priority, or the selection of home agents to be used by the mobile node being based upon priority.

Ton however, does teach a system for load balancing home agent requests between mobile nodes by compiling the information about the current busyness of nearby home agents, and suggesting the use of alternate home agents if the current agent is busier. See [0045]-[0048].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ton and AAPA with the idea of load balancing by sending the request to the least busy nearby home agent as taught by Ton in order to allow the mobile node to choose a new home agent in a load balanced way in the event that the primary home agent is unreachable.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 4, 8, 10, 14, 15, and 16 have been considered but are moot in view of the new ground(s) of rejection.

6. Further, Applicant continues to argue that Ton does not disclose an indicator of whether there is a request for home agent information. As stated in the rejection of record, a binding update message inherently contains the "A" field, which indicates whether the sender wants an acknowledgement or not. In Ton, a sender of the binding update message would know that the acknowledgement contains extra information (i.e. the slave home agent information), therefore, if an acknowledgement was desired, then

this is also inherently the desire of the sender of the BU message to receive this slave home agent information.

7. In order to differentiate Applicant's indicator from the indicator of Ton, the Examiner suggests a clarification that when the indicator indicates that no slave home agent information is desired, a BACK message is sent with no slave home agent information. This would differ from Ton because in Ton if the indicator indicates that there is no request for slave home agent information, no BACK message is sent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL E. KEEFER whose telephone number is (571)270-1591. The examiner can normally be reached on Monday through Friday 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MEK 6/7/2008

/Joseph E. Avellino/
Primary Examiner, Art Unit 2146